REMARKS/ARGUMENTS

Applicants appreciate the Examiner's care in reviewing this application. Claims 24-34, previously withdrawn from consideration, have been canceled without prejudice to applicants' right to present them in a divisional application.

Claim Rejection - 35 USC § 112

Claim 1 has been amended to recite the substrate as an element of the combination. Therefore, it is believed that claim 46 now properly recites "the substrate."

Claim Objection

Claim 45 has been objected to as failing to further limit the subject matter of claim 1. Claim 1 calls for a system "comprising" three elements. Claim 45 as amended recites that the system "consists essentially" of those elements and further states that the system is free of mesh or fabric reinforcement embedded in the upper layer or lower layer.

Claim Rejection - 35 USC § 102

Claims 1, 45, 49, 52 and 53 were rejected as anticipated by Close, U.S. Patent 4,265,953.

Close describes a composite in which an intumescent sheet material is adhered to a substrate web which is "flexible, strong, compliant and stressable. The tensile strength of the substrate material must be sufficient to withstand the pressures generated upon exfoliation of the intumescent material .... Metal foils or thin metal sheets, fabrics of glass or ceramic fibers, or metal wire mesh may be used for this web." The substrate web is the outer layer when the composite is

applied to a substrate to be protected (see Figs. 3 and 4). The Examiner refers to Figure 5 of Close as showing the invention as claimed in these claims. Figure 5 shows a system in which an intumescent sheet material is adhered to a substrate web and is covered by "an ablation resistant layer." The ablation resistant layer is applied to a hole in a wall, where it is exposed directly to erosive action. This appears to be the system described in Example 2, where both the substrate and the ablation resistant layers are aluminum tape, and the composite is used to patch a hole in a muffler. It is not seen how this design bears any relationship to the claimed invention. If the Examiner is referring to the design of Figures 1-4, and is reading the alternative fabric or wire mesh substrate as the "ablative fire protective layer," this is a quite different structure from that of the present invention. To emphasize the difference, claim 1 has been amended to recite that both the upper layer and lower layers are "polymeric" materials: a polymeric active fire protective material applied above the substrate, and an upper layer of a polymeric ablative fire protective material applied to the lower layer, the ablative material forming an open cell matrix when exposed to hyperthermal conditions to permit passage of gasses from the lower layer to ambient. It will be seen that the claim as amended describes a system entirely unlike the system disclosed in Close. Claims 45, 49, 52 and 53 are dependent on claim 1 and should be allowable with it. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art.

Claim Rejection - 35 USC § 103 (Close in view of Levine)

Claims 2, 5-7, 11-14, 17, 18-23, and 48 were rejected under 35 U.S.C. § 103(a) as unpatentable over Close in view of Levine, U.S. Patent 5,356,568. Claims 2, 5-7, 11-13, 23, and 48 are dependent on claim 1 and should be allowable with it. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art.

Claim 14 calls for two layers, each of which swells when exposed to fire or other hyperthermal condition, the upper layer swelling "to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the upper layer swelling less than the lower layer, the upper layer comprising a fill of refractory material comprising at least about seven percent of the upper layer by weight." Nothing in the prior art suggests such a combination. Even if Close were modified as suggested by the Examiner, the combined structure would not correspond to what is called for in claim 14 and it would not suggest the subject matter as a whole of claim 14. To establish a *prima facie* case of obviousness the prior art references when combined must teach or suggest all of the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Here, it is clear that the references cited by the Examiner do not teach or suggest all of the claim limitations.

Claims 18-22 are dependent on claim 14 and should be allowable with it. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art.

It is noted that *In re Boesch*, cited by the Examiner, says that discovery of an optimum value of a result effective variable [i.e., one disclosed by the prior art to produce the result sought by applicant] in a known process is *ordinarily* within the skill of the art, providing a rebuttable prima facie case of obviousness, and that, "It is well settled that a prima facie case of obviousness may be rebutted 'where the results of optimizing a variable, which was known to be result effective, [are] unexpectedly good.'" (Ellipsis in original.)

Claim Rejection - 35 USC § 103 (Close in view of Levine in view of Stayner)

Claims 3-4, 14-15, and 54 were rejected under 35 U.S.C. § 103(a) as obvious over Close in view of Levine and further in view of Stayner, U.S. Patent 4,216,136.

Stayner suggests an entirely different composition from those set out int the claims. Stayner does not suggest a multiple layer composite as claimed in claim 14. In particular, without limitation, it does not disclose or suggest such a system having an upper layer swelling "to form an open cell matrix to permit passage of gasses from the lower layer to ambient, the upper layer swelling less than the lower layer." There is no indication in Stayner that the composition swells at all (the only gas-forming materials appear to be the water of hydration of some of the additives, and that water eventually forms "small popcorn-like bubbles at the surface" (col. 7, lines 1-16) when the material is heated), and it appears to form a hard, non-porous coating when heated ("an isinglass [mica] type fused material is believed to form" (col. 7, lines 16-20)). Stayner therefore does not supply the portions of the claims missing from the proposed combination of Close and Levine.

Claims 3 and 54 are dependent on claim 1, and claim 15 is dependent on claim 14 and should be allowable with their parent claims. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art.

Claim Rejection - 35 USC § 103 (Close in view of Boyd)

Claims 8, 18, and 50-51 were rejected under 35 U.S.C. § 103(a) as obvious over Close in view of Boyd, Jr. et al., U.S. Patent 5,433,991 (Boyd). Claims 8 and 50-51 are dependent on claim 1, and claim 18 is dependent on claim 14, and should be allowable with their parent claims. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art. As with respect to the previous rejection, Boyd does not add the missing elements of the parent claims, nor does it, alone or in combination, suggest the invention set out in the claims as a whole.

Claim Rejection - 35 USC § 103 (Close in view of Bagdasarian)

Claims 46 and 47 were rejected under 35 U.S.C. § 103(a) as obvious over Close in view of Bagdasarian, U.S. Patent 5,094,887. These claims are dependent on claim 1 and should be allowable with it. They further set out features which, in the claimed combination, are neither shown nor suggested by the prior art. Bagdasarian confirms that primers and topcoats are used in conventional thermal protective coating systems. As with respect to the previous rejection, however, Bagdasarian does not add the missing elements of the parent claims, nor does it, alone or in combination, suggest the invention set out in the claims as a whole.

Claim Rejection - 35 USC § 103 (Feldman in view of Bagdasarian)

Claims 1, 7, 8, 45, 49, 52 and 53 were rejected under 35 U.S.C. § 103(a) as obvious over Feldman, U.S. Patent 4,493,945 in view of Bagdasarian, U.S. Patent 5,094,887.

Feldman (one of the inventors of the present invention) discloses a system in which an active thermal protective material 5 (which may be an intumescent material) is applied to a screen, and the combined screen and protective material are applied around the substrate to be protected. If desired, a fiberglass reinforcement 23 may be embedded in the protective material. As indicated by the Examiner, Feldman does not have an ablative layer over the active protective material, nor does he suggest any reason for or advantage in supplying such a layer.

Bagdasarian teaches an ablative coating comprising a resin (polyol, polyurethane or silicone) with a cork flour filler and a solvent. The coating is intended to replace a cork sheet as a thermal protection for delicate electronic assemblies. The coating described by Bagdasarian is not the upper layer called for in the claims. Nothing in Bagdasarian suggests that the coating disclosed has any of the characteristics assumed by the Examiner. It is not an inherent property of any ablative coating that it forms an open cell matrix, that it is capable of protecting against a jet fire, or that it swells by about 10-100% as set out in the claims. Further, nothing in Bagdasarian suggests any reason to combine it with another type of thermal protective coating.

Claim Rejection - 35 USC §103 (Feldman in view of Bagdasarian and Stayner)

Claims 3-4, 11-16, 19-23, and 54 were rejected under 35 U.S.C. § 103(a) as obvious over Feldman in view of Bagdasarian, further in view of Stayner.

The references teach as set out above. The Examiner's statement that "Feldman essentially teaches the claimed invention" is not understood. Feldman does not disclose an ablative overlayer as set out in the independent claims, and the references do not provide either the motivation or the means to provide the combination as set out in these claims.

New claims 55-61

Claims 55-61 are newly added and recite composition of the upper and lower layers of the composite. Nothing in the prior art shows or suggests the combination set out in these claims.

CONCLUSION

It is believed that all the claims as now submitted are in condition for allowance, and such action is hereby requested.

Respectfully submitted,

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